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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

STELLING, LUCAS A

ART UNIT

PAPER NUMBER

1778

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,936	Applicant(s) TABATA ET AL.	
	Examiner LUCAS STELLING	Art Unit 1778	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-20, 22, 23 and 26-33 is/are pending in the application.
- 4a) Of the above claim(s) 14-18, 20 and 26-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19, 22-23, and 31-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-13, 21, and 24-25 are canceled. Claims 14-20, 22, 23, and 26-33 are pending. Claims 14-18, 20 and 26-30 are withdrawn and claims 19, 22, 23, and 31- 33 are examined on the merits herein.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 19, 22, 23, and 31-33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 19 and 31 recite the limitation “an ultraviolet ray-transmitting reaction bath for forcing the oxidized water fed from the pump to inflow.” This limitation creates confusion in the claims because it is unclear what further structure is implied by this function of forcing the oxidized water fed from the pump to inflow. For purposes of examination it will be considered that any UV treatment unit bath capable of receiving the oxidized water from a pump meets this limitation. Claims 22, 23, 32, and 33 are rejected for their dependence on claims 19 and 31.

Claim Objections

4. Applicant is advised that should claims 19, 22, or 23 be found allowable, claims 31, 32, or 32, respectively, will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it

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is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 19, 22, 23, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Shadman and Horton.

9. As to claims 19, and 31 Noguchi teaches a water treatment apparatus comprising:

a wastewater treatment bath for treating wastewater (**See Noguchi Fig. 12, and edited Fig. 12 below, 'A' represents the treatment bath into which ozone is provided through 54 see also [0046]**);

an oxidizing reagent adding unit for adding an oxidizing reagent in the waste water treatment bath (**54 and see [0046]**);

an ultraviolet treatment unit (**63 is a photocatalytic reaction vessel, having an ultraviolet lamp 64**) for irradiating an ultraviolet ray comprising:

a reaction bath that receives the oxidized water fed from wastewater treatment bath (**63**); and

an ultraviolet lamp that irradiates the reaction bath (**64**); and

an acid treatment bath (**60**) having an acid adding unit (**61**) for adding acid, the acid treatment bath provided on a downstream side of the wastewater treatment bath and on an upstream side of the ultraviolet treatment unit(**See Noguchi Fig. 12 and see edited Fig. 12 below**).

Noguchi is different from claims 19 and 31, in that Noguchi does not teach a pump which feeds oxidized water from the wastewater treatment bath to the ultraviolet treatment unit reaction bath which receives the oxidized water from the pump, or that the a pair UV lamp is provided outside the reaction bath.

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As to providing a pump which feeds oxidized wastewater from the treatment bath to the ultraviolet treatment unit reaction bath, Shadman is directed to a system for the treatment of water with UV in a UV reaction chamber (**See Shadman Fig. 1**). Shadman provides a pump just upstream of the UV treatment chamber in order to control the supply of water to the UV reactor (**See 45 in Fig. 1 and see col. 3 lines 1-5**).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to provide a pump just upstream of the UV reaction chamber in Noguchi in order to control the supply of water to the UV reactor, as taught by Shadman; and in doing so, to provide a pump which delivers oxidized water from the treatment bath to the UV reaction bath, since the water entering the UV chamber has passed through the wastewater treatment bath.

As to providing the UV lamp above the reaction bath, Horton is directed to a water treatment system in which the UV lamp is provided above the liquid in a UV treatment reactor (**See Horton abstract, Figs 4 and 5; and see at least col. 9 lines 10-25 and generally col. 9 lines 10-45**). Horton explains that the use of a UV source above the liquid to be treated reduces maintenance time since quartz sleeve will not become fouled (**See Horton col. 5 lines 20-35**). Horton further contemplates multiple UV light sources (**See Horton col. 9 lines 10-11; at least one light source is contemplated which is interpreted to contemplate multiple light sources**).

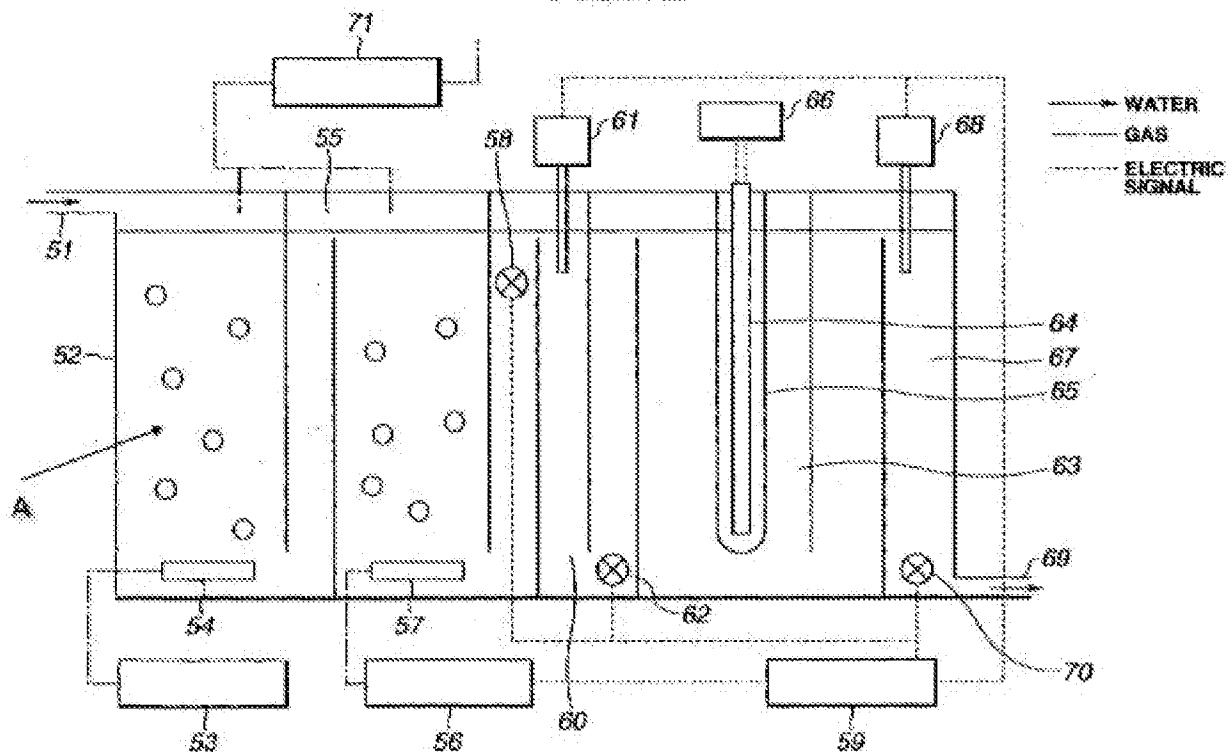
Therefore it would have been obvious to a person having ordinary skill in the art at the time of invention to provide a pair UV light above the UV treatment bath in Noguchi in order to provide a UV source requiring reduced maintenance as taught by Horton.

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Furthermore, providing two light sources as opposed to one is considered an obvious duplication of parts which is not patentably significant unless new and unexpected results are shown. See MPEP 2144.04(VI)(B).

It is acknowledged that the embodiment of Fig. 12 in Noguchi does not mention removing COD components contained in a wastewater produced and discharged in a gas purification process of a gasification facility; that the acid treatment bath has a pH of 2-4, that the wastewater treatment bath has a pH of 7-12 based upon an alkaline reagent, or that the UV lamp decomposes COD components. However these limitations are drawn to applicant's intended use of the apparatus and they do not serve to define it in terms of its structure. See MPEP 2114 and 2115. Noguchi is fully capable of meeting these limitations. Such a discharged liquid could be provided to the apparatus. The solution pH in the acid treatment bath can be made to between 2 and 4 with the acid adding unit, a pH adjusted water, adjusted with alkaline reagent, can be supplied to the inlet of the device thereby providing a pH in the wastewater treatment bath of between 7-12, and the UV light facilitates oxidation reactions which will reduce COD.

FIG.12



10. As to claim 22 and 32, Noguchi in view of Shadman and Horton teaches the apparatus of claim 19 and 31, and these limitations of claims 22 and 23 are drawn to the functional limitations of an apparatus and the material operated on by the apparatus and do not serve to further patentably define the apparatus in terms of its structure. See MPEP 2114 and 2115. The treatment apparatus in Noguchi is fully capable of providing the amount of oxidizing agent to COD in claims 22 by adjusting the oxidizing introduction rate.

11. As to claims 23 and 33, Noguchi in view of Shadman and Horton teaches the apparatus of claim 19 and 31, and these limitations of claims 23 and 33 are drawn to the functional limitations of an apparatus and the material operated on by the apparatus

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and do not serve to further patentably define the apparatus in terms of its structure. See MPEP 2114 and 2115. The treatment apparatus in Noguchi is fully capable of providing the amount of oxidizing agent to COD in claims 23 and 33 since Noguchi does not mention that the deozone eliminator eliminates all ozone (**See Noguchi [0046]**). Instead, Noguchi teaches that the sensor detects an ozone concentration, and determines whether ozone removal is sufficient (**See Noguchi [0046]**); which is interpreted to mean that the apparatus is capable of letting ozone pass to the UV treatment tank, thereby providing an ozone to COD ratio even if a substantial amount of ozone is removed in the deozone eliminator.

Response to Arguments

12. Applicant's arguments filed 7-6-11 have been fully considered but they are not persuasive.

Applicant first argues that advantageous merits discussed on the instant specification are not suggested in Noguchi. Applicant argues that COD concentration reduction and that it is difficult to say that the perfectly adjusted liquid (treated water) is discharged from the outlet of Noguchi. Applicant further points out that no experimental data regarding the final treated wastewater is presented or disclosed in Noguchi. In response, applicant is claiming an apparatus, not a method. Claims to apparatuses cover what a device is not what it does. See MPEP 2114. . Noguchi in view of Shadman and Horton is fully capable of meeting these functional limitations. The solution pH in the acid treatment bath can be made to between 2 and 4 with the acid adding unit, a pH adjusted water, adjusted with alkaline reagent, can be supplied to the

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inlet of the device thereby providing a pH in the wastewater treatment bath of between 7-12, and the UV light facilitates oxidation reactions which will reduce COD.

Applicant argues with respect to Shadman that Noguchi in combination with Shadman allegedly fails to render obvious an embodiment falling within the scope of claim 19. In response, Shadman is cited to show that a person having ordinary skill in the art at the time of invention would have found it obvious to use a pump just upstream of the UV treatment chamber in Noguchi in order to control the supply of water to the UV treatment chamber in Noguchi. And in so doing, provide a pump which delivers oxidized water from the treatment bath to the UV reaction bath, since the water entering the UV chamber has passed through the wastewater treatment bath.

Applicant argues with respect to the teaching of Horton that it is improper to conclude in view of Horton to provide for UV source above, and outside, the bath of being treated since Horton allegedly contemplates the use of "wiper glides over the sleeves to remove deposits, which may block the light emitted from the UV lamp." Applicant goes on to argue that Horton discloses a vertical riser configuration which is shown generally in figure 3 and then applicant alleges that this is structurally different from the claimed ultraviolet ray-transmitting reaction bath and lamps. In response, Horton discusses the use of the wiper glides in the background section, but still explains that maintenance is required when the lamps are submerged (**See Horton col. 5 lines 26-35**). Applicant further references the embodiment of Fig. 3, however in Figs. 4 and 5, which are referred to in the rejection, Horton is directed to a water treatment system in which at least one UV lamp is provided above the liquid in a UV treatment reactor

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(See Horton abstract, Figs 4 and 5; and see at least col. 9 lines 10-25 and generally col. 9 lines 10-45). Horton explains that the use of a UV source above the liquid to be treated reduces maintenance time since quartz sleeve will not become fouled **(See Horton col. 5 lines 20-35).** Horton further contemplates multiple UV light sources **(See Horton col. 9 lines 10-11; at least one light source is contemplated which is interpreted to contemplate multiple light sources).** Therefore it would have been obvious to a person having ordinary skill in the art at the time of invention to provide a pair UV light above the UV treatment bath in Noguchi in order to provide a UV source requiring reduced maintenance as taught by Horton. Furthermore, providing two light sources as opposed to one is considered an obvious duplication of parts which is not patentably significant unless new and unexpected results are shown. See MPEP 2144.04(VI)(B).

Applicant then refers the examiner to instant Fig. 13 and paragraph 44, and applicant notes that the apparatus comprises an ultraviolet ray-transmitting reaction bath for forcing the oxidized water fed from the pump to inflow; and a pair of ultraviolet lamps that are disposed outside the reaction bath. In response, it is not clear what is mean by "forcing the oxidized water fed from the pump to inflow." For the purposes of conducting examination that the treatment unit is capable of receiving water fed from a pump is considered to meet this limitation. In view of the combination of Noguchi and Shadman, the UV treatment chamber of Noguchi is capable of receiving the flow from the pump. Further, with respect to the pair of lamps disposed outside the reaction bath, disposing of lamps outside of the reaction bath is taught in Horton in order to reduce

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maintenance related to cleaning of the lamps, and therefore in *Noguchi* in view of *Shadman* and *Horton* it would have been obvious to a person having ordinary skill to dispose the lamps outside of the bath in order to reduce maintenance.

Applicant argues that claim 31 is allowable for analogous reasons to those presented for claim 19. In response, these reasons are not found persuasive as discussed above. Further claim 31 has been amended to be a substantial duplicate of claim 19 such that if claim 19 was to be found allowable claims 31-33 would be objected to under Rule 75 as being a substantial duplicate.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUCAS STELLING whose telephone number is (571)270-3725. The examiner can normally be reached on Monday through Friday 9:00AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Las 8-2-11

/Nam X Nguyen/
Supervisory Patent Examiner, Art
Unit 1778